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09/879,934	06/14/2001	Yasumi Sago	K-1984	4444

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EXAMINER

KACKAR, RAM N

ART UNIT PAPER NUMBER

1763

DATE MAILED: 07/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 33, 41-43, 48, 56-60 and 63-65 are rejected under 35 U.S.C. 102(b) as being anticipated by Mountsier et al (US 5810933).**

Mountsier et al disclose an electrostatic chuck (Fig 1 and Col 1 lines 39-54), comprising a dielectric layer (Fig 1-4), chucking electrode (Fig 1-2), temperature control (Col 1 line 41 and Col 8 lines 40-49), chucking power source (Fig 1-14), marginal convex (Fig 11b-78), chucking surface concaves for heat exchange gas (Fig 11b), under pressure (Col 7 line 48), gas distribution concave (Fig 11b –74) which are deeper than heat exchange concaves (Fig 11b), gas distribution concaves formed in coaxial with the center of the stage (Fig 7), gas inlets connected to gas diffusion concaves at positions off the center of the stage (Fig 19a- 82 and Col 13 lines 50-60), the depth of heat exchange concaves being below 40 μm (Col 10 line 65) and the depth of gas diffusion concaves being 700 μm (Col 13 line 14), the contact area being 10% (Col 9 line 42), main body cooling cavity (Fig 3) and a heat conducting layer between dielectric and main body for cooling (Fig 5-54).

Area of gas diffusion concaves is indirectly disclosed to be at least 5% (on a wafer of 200 mm diameter (Col 11 line 37) and diffusion concave width of 0.5 to 2.5 mm (Col 13 line 16) and plan view of Fig 15a to 19 b will yield an estimate of at least 5%).

Mountsier et al disclose radial and circumferential gas diffusion concaves inside an outer circumferential concave, an inner circumferential concave (Fig 17a and 19a – the hexagonal shaped) and several alternative gas distribution structures, but do not explicitly disclose a plurality of inner circumferential concaves.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claim 61 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mountsier et al (US 5810933) in view of Moslehi (US 5936829).**

Mountsier et al disclose radial and circumferential gas diffusion concaves inside an outer circumferential concave, an inner circumferential concave (Fig 17a and 19a – the hexagonal shaped) and several alternative gas distribution structures, but do not explicitly disclose a plurality of inner circumferential concaves.

Moslehi discloses another chuck and discloses a plurality of circumferential concaves (Fig 3) containing wider gas outlets connected at the crossing of circumferential and radial concave (Fig 3-74).

Since additional inner circumferential concaves is an alternative and equivalent way for distributing heat transfer gas and helps in obtaining better uniformity closer to center as disclosed

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by Moslehi too, it would have been obvious for one of ordinary skill in the art at the time of invention to have additional circumferential concaves.

5. Claims 62 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mountsier et al (US 5810933) in view of Moslehi (US 5936829) and further in view of Sexton et al (US 6377437).

Mountsier et al as modified by Moslehi do not disclose lift pin provided in gas introduction channel.

Sexton et al disclose cooling gas flowing through lift pin holes (Abstract and Fig 9-46).

Therefore it would have been obvious for one with ordinary skill in the art at the time invention was made to use gas channel hole for dual purpose of lift pin hole as well as cooling gas channel to make the design simpler and economical.

Response to Amendment

Applicant's arguments filed 5/5/2006 have been fully considered but they are not persuasive.

Applicant argues that the new limitations of Helium gas and heat exchange concaves being less than 20 μ m are the distinguishing features over Mountsier et al and the data presented in Fig 9 of Mountsier et al is not applicable to use of helium gas. This is not correct since use of a certain gas is a functional limitation. However typically used heat exchange gases Helium, Argon and Hydrogen are disclosed. The graph of Fig 9 is to show the relationship of pressure to heat transfer coefficient. The information of any particular interest from structural point of view is the disclosure of the depth of heat exchange concaves from 5-100 μ m.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ram Kackar
Examiner AU 1763